Navy seeks a shipboard sewage treatment system

The U.S. Navy is about to commission the reinvention of the wheel. The Office of Applied Research in the Naval Ship Systems Command (NSSC) recently announced that it is looking for bids on a full-scale research program to develop a waste disposal system. The system the Navy has in mind would reduce sewage and kitchen garbage to carbon dioxide, nitrogen and some sulfur salts and produce electricity and drinking water. The fact that such a system, the Zimmerman process, is already on the market apparently has not stopped the Navy's plans to award a research and development contract sometime within the next few months.

What the Navy wants for ships and possibly shore bases is a wet air combustion system that will end pollution and some of the corrosion problems it now has from using salt water in parts of ships' plumbing systems. Moreover, the system would keep itself going, generating its own heat at nearly 1,000 F and pressures of 1,000 psi.

Project manager Roy R. Peterson calls it the "waste disposal plant of the future on land and sea."

But 45 companies and municipalities around the world already think of this type of system as the plant of today. The wet air oxidation (Zimmerman) process that the Navy wants is already in use or under construction in that many locations. From Yokohama, Japan, to Chicago, the process breaks down city sewage, plastics and even pulp mill liquors into elemental chemicals, gases and water. Plants handle loads from 300 tons a day, in Chicago's 10-year-old pioneer plant, to 1.4 tons, or just about the output from a destroyer crew. Cannon Mills and the city of Kannapolis, N.C., use their jointly financed plant to treat textile mill wastes and domestic sewage.

Zimpro's work was not totally unknown to the Navy. Peterson, however, says that none of Zimpro's promotional literature filed at NSSC indicated its equipment operated in the ranges proposed for Navy ships. But Federal Water Quality Administration officials needed only five minutes to locate operating reports showing that existing Zimpro plants meet or exceed the Navy's feasibility requirement.

Peterson plans to ask industry for formal bids next month. "We may be so close to Zimpro that it doesn't warrant doing anything about it," he says. The Navy still plans to go ahead despite the fact that it will, in effect, be financing competition for Zimpro.

The ship system development program calls for a laboratory scale feasibility demonstration of continuous waste processing at high temperature. The demonstrations would be followed by enough federal money, Navy managers promise, for both a pilot and full-scale prototype system. "When people ask me how much money is in this, I tell them 'enough'," says Peterson.

Prospective bidders, according to some sources, include more than one user, owner, neighbor or competitor to Zimpro's equipment. And Zimpro officials plan to respond to the Navy's research call, even though most of the proposed work fits its existing capabilities. Zimpro's patents expire in 1972.

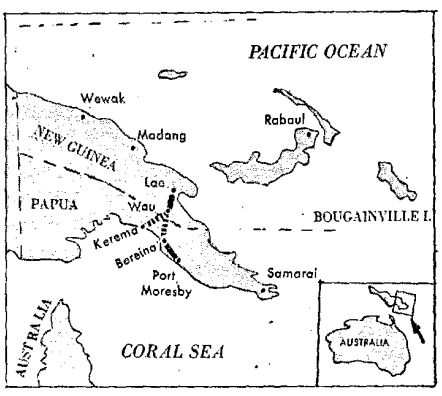
While Zimpro's patented system is close to the Navy's needs, it is not an exact match. It would need special adaptation to shipboard conditions and limited shipboard space. It would need to generate 2,000 kw, more power than any Zimpro plant can now produce. Getting drinking water directly from Zimpro's steam is not yet a perfected technique. The distilled water contains tiny amounts of some compounds that Zimpro officials say put it on a par with some bad tasting municipal water, safe but not very tasty. Zimpro says its customers have not asked for drinking water quality effluent.

Building boom hits once primitive New Guinea

New Guinea, an island once known only for its primitive tribes, impenetrable forests and Dutch colonists, is rapidly gaining recognition as a supplier of valuable natural resources.

The largest project, estimated to cost over $350 million, is an open pit copper mine on Bougainville Island, under the engineering and construction management of Bechtel Corp. and Western Knapp Engineering, both of San Francisco. Financing for the development, which includes two new towns, access roads, utilities, a 16-mile slurry pipeline, 250-ft concrete pier and ship loading facilities, is made possible through loans from the Bank of America and two Japanese trading companies. Production is scheduled to begin next year.

Until recently, New Guinea's rugged terrain and tropical humidity inhibited nearly all development. But the Australian trust territories of Papua and New Guinea (West New Guinea is governed by Indonesia) anticipate independence and seek new roads to the interior.



Trans-Island road starts to open interior.

Funds for Papuans and New Guineans to study transportation at universities overseas are provided by a $9-million World Bank loan that will also be used to realign and construct two gravel roads into the densely forested interior of Papua.

By 1980, the islanders plan to have their first trans-island road. Estimated to cost $20 million, it will link Port Moresby with Lae, the island's busiest port. Bulldog Trail, which starts at Bereina on the southern coast and was built by the Australian army during World War II, is considered a prime prospect among the five north-south routes being studied.

A Papuan contractor is building a 7-mile gravel road along the coast west of Port Moresby that will eventually become part of a $4-million route extending 80 miles northwest to Bereina and connect with the trans-island highway.

Alan M. Voorhees & Associates, McLean, Va., and Maunsell and Partners, Melbourne, conducted an urban development study for Port Moresby, recommending expenditure of $45 million over 20 years to develop the city core, relocate the airport, develop major roads and expand port facilities.

The Australian territorial government also plans improvements at several other overcrowded ports.